

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
12 January 2006 (12.01.2006)

PCT

(10) International Publication Number
WO 2006/002655 A1

(51) International Patent Classification⁷: **A47L 13/20**,
B25G 1/04

(21) International Application Number:
PCT/EP2004/007012

(22) International Filing Date: 29 June 2004 (29.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): ECO-LAB INC. [US/US]; 370 Wabasha Street N., St. Paul, MN 55102-1390 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): UHL, Stefan [DE/DE]; Wolfhagener Strasse 2, 40789 Monheim (DE).

(74) Agent: GESTHUYSEN, VON ROHR & EGGERT; Huyssenallee 100, 45128 Essen (DE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

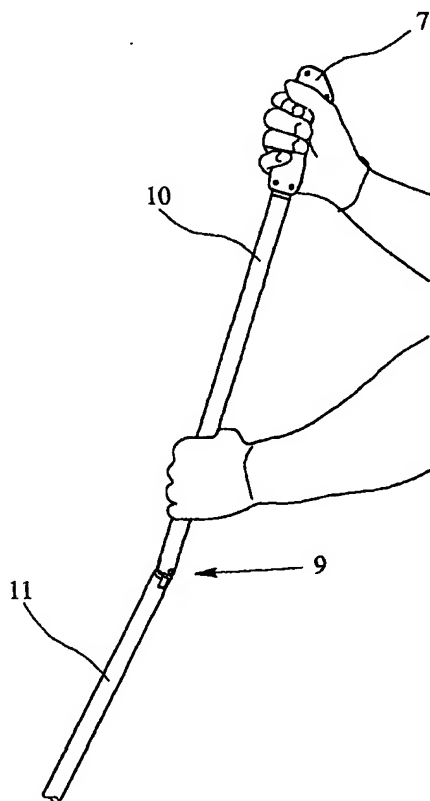
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MOP HANDLE FOR A MOPPING DEVICE



(57) Abstract: The invention discloses a mop handle (1) for a mopping device for mopping surfaces to be cleaned, comprising a lower end section (4) for preferably non-rotatable attachment to a mop holder (2), possibly provided with some attachment formation (5), an upper end section (6) for handling of the mop handle (1), possibly provided with some handle-holding formation (7). This specific mop handle is particularly convenient when using a mopping device, because an articulated connection (9) with an angle limitation is provided between an upper part (10) of the mop handle (1) and a lower part (11) of the mop handle (1), allowing for a limited angle between both parts (10, 11). Preferentially, the articulated connection (9) is provided with a spring return means (12) keeping both parts (10, 11) in their straight relative position if no external force is applied.

WO 2006/002655 A1

- 1 - IAP20 RECEIVED 03 FEB 2006

Mop Handle for a Mopping Device

5 The invention relates to a mop handle for a mopping device for mopping surfaces to be cleaned as well as to a mopping device comprising such a mop handle and a mop holder attached to this mop handle, and in particular a mop handle according to the generic part of claim 1 and a mopping device according to the generic part of claim 8.

10 Mopping devices for mopping surfaces to be cleaned are widely used in the professional and private field. However, in the professional field, the design of mopping devices needs special attention, because professional surface cleaning with high speed and efficiency needs perfect working tools. Strenuous working positions reduce working ability and increase sickness absence. The construction and handling features of mopping devices are important for increasing working efficiency of professional personnel.

20 Mopping devices for mopping surfaces to be cleaned with mop handle and mop holder and a mop cover attached to the mop holder are widely known from prior art and for generations (US 3,711,886 A, US 4,114,223 A, US 4,840,800 A, US 5,864,914 A). To increase working efficiency, three-dimensional mop holders with two essentially opposite, alternately useable flat sides have been provided using a removable mop cover covering both sides of the mop holder and being alternately useable either on one side or on the other side (see above-mentioned references).

25 Whereas the mop holder of mopping devices has been subject to many modifications over the years, the mop handle has remained more or less unchanged. Even so-called ergonomic handles are nothing other than traditional straight mop handles with some additional hand support, a ball-shaped upper end of the mop handle and a thermoplastic covering of the mop handle, at least in the upper end section.

30 There has been an attempt to improve a mop handle for increased working efficiency (US 5,920,944 A). This mop handle comprises first and second elongated cylindrical members with first and second ends, first and second angular bends intermediate the two ends in such a manner that the two long parts of the mop

handle are parallel, but in different, offset planes. A swivel grip is provided on the first end of the upper part, so that the handle-holding formation provided by the swivel grip may be turned about the longitudinal axis of the upper part of the mop handle. Moreover, the lower part of the mop handle is designed as a telescopic system to adapt the length of the mop handle to the body height of the person using the mopping device.

In view of the above, the object of the present invention is to further improve working efficiency for a mopping device for mopping surfaces to be cleaned, concentrating on the mop handle.

Above-mentioned object is solved with a mop handle according to the generic part of claim 1 by realizing the features of the characterizing part of claim 1.

The new mop handle has an articulated connection between the upper part of the mop handle and the lower part thereof. However, this articulated connection has an angle limitation so that the angle between both parts of the mop handle does not exceed a maximum value. This means that it is possible to find the most convenient working position and, in particular in connection with three-dimensional mop holder with two opposite flat sides, this position varies when the operating personnel turns the mop holder. This variation can be taken care of by the articulated connection so that the mop handle follows the needs of the person using the mopping device.

Further, for handling of the mopping device, it has been revealed as necessary that the articulated connection has a pivot axis or other pivot formation, which extends essentially along the lengthwise extension of a mop holder, in the intended attachment position of the mop holder on the mop handle.

The maximum angle for the angle limitation has been revealed to be preferably about 140°, further preferably of about 145°, most preferably of about 155°. These values are given based on the fact that the straight position is defined as 180°.

The articulated connection is particularly convenient for a person using a mopping device with such mop handle if the articulated connection is provided with a

spring return means keeping both parts in their straight relative position if no external force is applied. Such spring return means may be provided by an elastomeric spring member, a conventional metallic coil spring or a pneumatic (gas) pressure element. If the spring force of the spring return means is properly adapted to the working circumstances, the mop handle may be used conventionally as a straight mop handle that, as well, has an angled mop handle according to the invention, always following the specific needs of the person using the mopping device.

10 A pivot axis is the most conventional articulated connection, however, some kind of other formation originating a pivot-like movement of both parts of the mop handle may be used, as well. The orientation of the specific pivot axis especially corresponds to the needs of a three-dimensional mop holder.

15 The articulated connection may be provided as a kind of ball and socket joint.

It is helpful if the articulated connection is provided approximately in the middle of the complete mop handle.

20 An additional, sometimes helpful modification of the mop handle according to the invention is provided in that the handle holding formation is provided as a part of the mop handle separate from the upper part of the mop handle and connected to the upper part of the mop handle by means of a swivel joint. This means that the hand holding the handle-holding formation needs no turning while the mopping device is moved from left to right in the usual swinging, mopping motion of a cleaning person. This reduces hand and wrist strains for the person using this kind of mopping device.

30 It is well known in the prior art to provide mop handles with a telescopic function so that the mop handle may be adapted to the body height of the person using this mopping device. In the specific circumstances of the invention, however, if a telescopic system is used, it should be assigned to the lower part of the mop handle.

35 Of course, not only the mop handle as such is covered by this invention, but also a mopping device including such mop handle together with a mop holder, in par-

ticular a three-dimensional mop holder with two essentially opposite, alternately useable flat side. Here, reference is made to a co-pending PCT application of the applicant filed the same day (PCT/DE 2004/....., attorney's reference 03.0855).

5

Now, other aims, features, advantages and applications of the invention may be obtained from the following descriptions of preferred embodiments of the invention with reference to the drawings. In the drawings

10 Fig. 1 shows a complete mopping device with mop handle and mop holder according to the invention,

Fig. 2 shows an enlarged view of the upper part of the mop handle in operation,

15

Fig. 3 again shows an enlarged view of the articulated connection of the mop handle.

The mopping device shown in Fig. 1 consists of a mop handle 1 and a mop holder 2. The mop handle 1 is attached to the mop holder 2 in an articulated way, here as usual by means of a universal or cardan joint 3 as part of a handle holder. With this articulated connection, the mop holder 2 with a mop cover (not shown) attached to the mop holder 2 may be moved in a swinging movement from left to right and right to left over the surface to be cleaned either forwards or, in professional cleaning methods, mostly backwards (figure eight movement).

25

The mop handle 1 has a lower end section 4. This lower end section 4 is non-rotatably attached to the mop holder 2 by means of the universal joint 3. Fig. 1 indicates an attachment formation 5, which is just a spring pin fixing the lower end section 4 of the mop handle 1 in the universal joint 3.

30

Further, the mop handle 1 comprises an upper end section 6 for handling of the mop handle 1. In the present embodiment, the upper end section 6 is provided with a handle-holding formation 7 of, here, thermoplastic material with a form that allows easy gripping of this handle-holding formation 7.

35

The mop holder 2, here, is a specific mop holder with two essentially opposite, alternately useable flat sides 8. However, whereas the inventive mop handle 1 is particularly advantageous with such a three-dimensional mop holder 2, the mop handle 1 in general is applicable with all kinds of traditional mop holders, as well.

Now, the mop handle 1 shows an articulated connection 9 provided between an upper part 10 of the mop handle 1 and a lower part 11 of the mop handle 1. The articulated connection 9 allows for a limited angle between both parts 10, 11. Figs. 2 and 3 show enlarged views of this part of the mop handle 1.

The embodiment of Figs. 1 to 3 further shows a preferred construction in that the articulated connection 9 has a pivot axis 13, which extends essentially along the lengthwise extension of the mop holder 2 when it is attached to the mop handle 1. So, together with the non-rotatable attachment of the mop handle 1 to the mop holder 2 at the handle holder, the specific mop handle 1, although provided with the articulated connection 9, allows for a directed back and forth movement of the mop holder 2 across the surface to be cleaned.

A pivot axis 13 of the articulated connection 9 of Figs. 1 to 3 is provided by a pivot pin. However, another formation that achieves essentially the same result of only one specific direction of movement of the parts 10, 11 relative to one another can be used as articulated connection 9, as well, e.g. a ball and socket joint with a guided movement to achieve the direction of the angle.

In the present embodiment, the articulated connection 9 is provided with a spring return means 12 that keeps both parts 10, 11 in their straight relative position if no external force is applied. This is helpful in practice, because the mop handle 1 may be used in a traditional way as a straight pole and, applying sufficient external force to the mop handle 1, in the inventive, angled form.

Fig. 3 shows the spring return means 12 as an intermediate phase of elastomeric compressible material between both parts 10, 11 of the mop handle 1. However, other forms of spring return means 12 can be used, e.g. an elastomeric spring member, a conventional metallic coil spring or even a pneumatic spring means like a gas pressure cartridge or the like.

In the embodiment of Figs. 1 to 3, the articulated connection 9 is provided approximately in the middle of the complete mop handle 1. So, the upper part 10 of the mop handle 1 indeed serves for handling of the mop handle 1 as indicated in Fig. 2, whereas the lower part 11 just follows the movement of the upper part 10.

The preferred embodiment of Figs. 1 to 3 shows an angle limitation of the articulated connection 9 that limits the angle between both parts 10, 11, the straight position being 180°, to a maximum of about 140°, preferably of about 145°, most preferably of about 155°. The embodiment of Fig. 2 shows an angle of about 165°.

An articulated connection 9 may, as well, be provided by an elastomeric, flexible tubing or joint that connects both parts 10, 11 of the mop handle 1 or by a corresponding elastomeric, deformable member incorporating the spring return means 12, as well.

The embodiment of Figs. 1 to 3 further has a design with a handle-holding formation 7, which is separate from the upper part 10 of the mop handle 1 and connected to this upper part 10 by means of a further swivel joint 14. So, this part of the handle is a straight extension of the upper part 10 of the mop handle 1, but, as such, may be rotated about the longitudinal axis of the upper part 10 of the mop handle 1. This is helpful for the person using such mop handle 1, in particular together with a three-dimensional mop holder 2 with two alternately useable flat sides 8.

Finally, as already disclosed by US 5,920,940 A, the lower part 11 of the mop handle 1 may be designed as a telescopic system.

Claims:

1. Mop handle (1) for a mopping device for mopping surfaces to be cleaned, comprising
5 a lower end section (4) for preferably non-rotatable attachment to a mop holder (2), possibly provided with some attachment formation (5), an upper end section (6) for handling of the mop handle (1), possibly provided with some handle-holding formation (7),
characterized in that
10 an articulated connection (9) with an angle limitation is provided between an upper part (10) of the mop handle (1) and a lower part (11) of the mop handle (1), allowing for a limited angle between both parts (10, 11), and the articulated connection (9) has a pivot axis (13) or other pivot formation, which extends essentially along the lengthwise extension of a mop holder
15 (2), in its intended attachment position to the mop handle (1).
2. Mop handle according to claim 1, characterized in that the articulated connection (9) is provided with a spring return means (12) keeping both parts (10, 11) in their straight relative position if no external
20 force is applied.
3. Mop handle according to any one of the preceding claims, characterized in that the articulated connection (9) is provided as a kind of ball and socket joint, or as an elastomeric, flexible tubing or joints, with a guiding means to
25 achieve the effect of a pivot formation.
4. Mop handle according to any one of the preceding claims, characterized in that
30 the articulated connection (9) is provided approximately in the middle of the complete mop handle (1).
5. Mop handle according to any one of the preceding claims, characterized in that

the angle limitation of the articulated connection (9) limits the angle between both parts (10, 11), the straight position being 180°, to a maximum of about 140°, preferably of about 145°, most preferably of about 155°.

- 5 6. Mop handle according to any one of the preceding claims, characterized in that
the handle-holding formation (7) is provided as a part of the mop handle (2) separate from the upper part (10) of the mop handle (1) and connected to the upper part (10) of the mop handle (1) by means of a swivel joint
- 10 7. Mop handle according to any one of the preceding claims, characterized in that
the lower part (11) of the mop handle (1) is designed as a telescopic system.
- 15 8. Mopping device for mopping surfaces to be cleaned, comprising a mop holder (2) and a mop handle (1) attached to the mop holder (2) in an articulated way,
characterized in that
the mop handle (1) comprises the features of one or more of claims 1 to 7.
- 20 9. Mopping device according to claim 8, characterized in that
the mop holder (2) is a three-dimensional mop holder (2) with two essentially opposite, alternately usable flat sides.

1/3

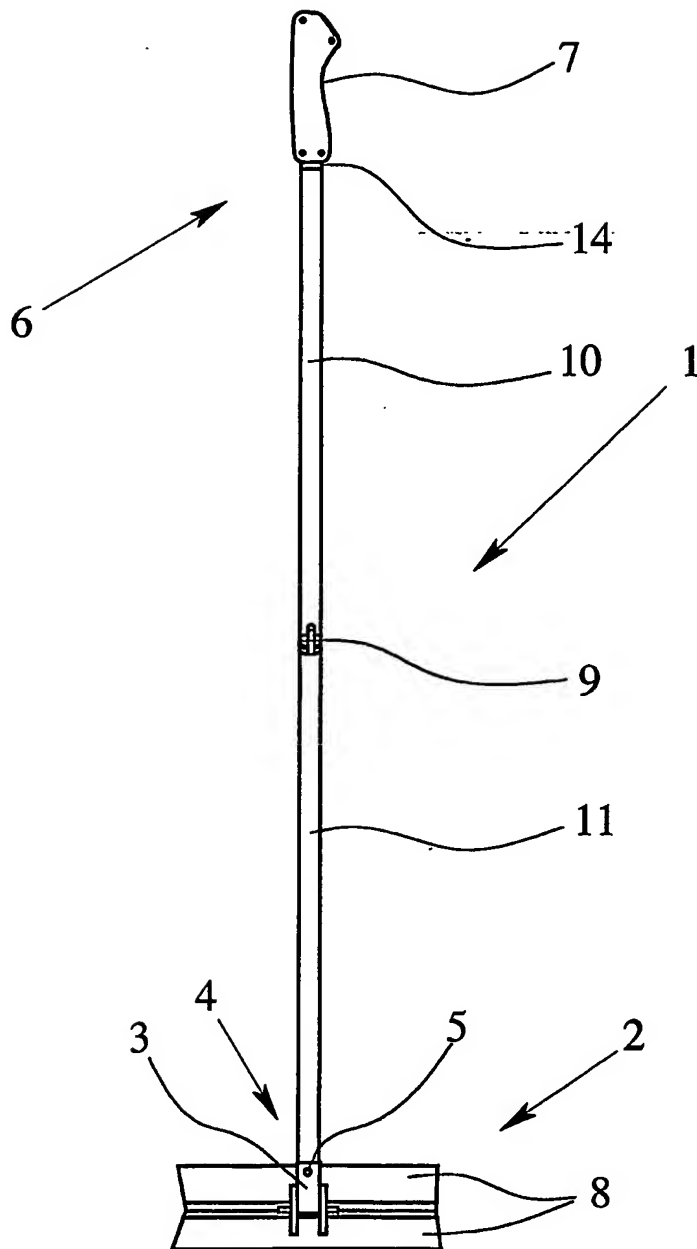


Fig. 1

2/3

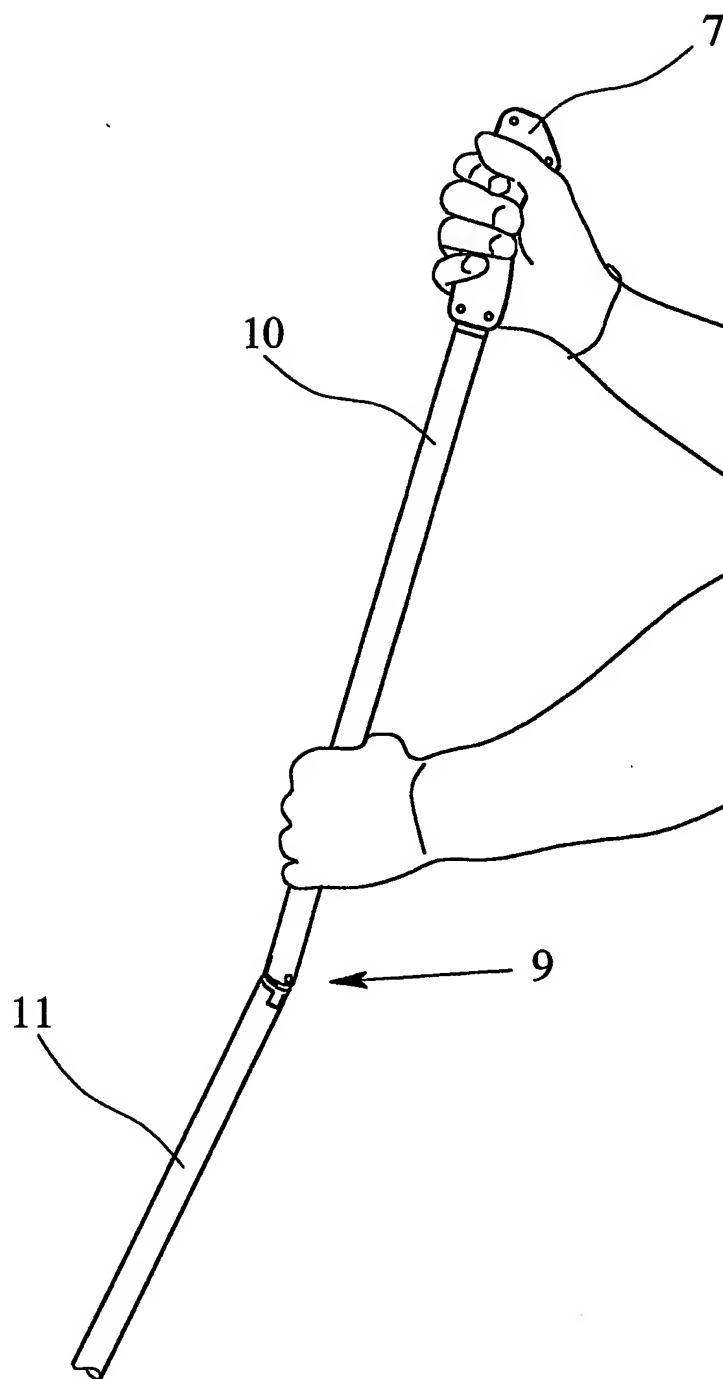


Fig. 2

3/3

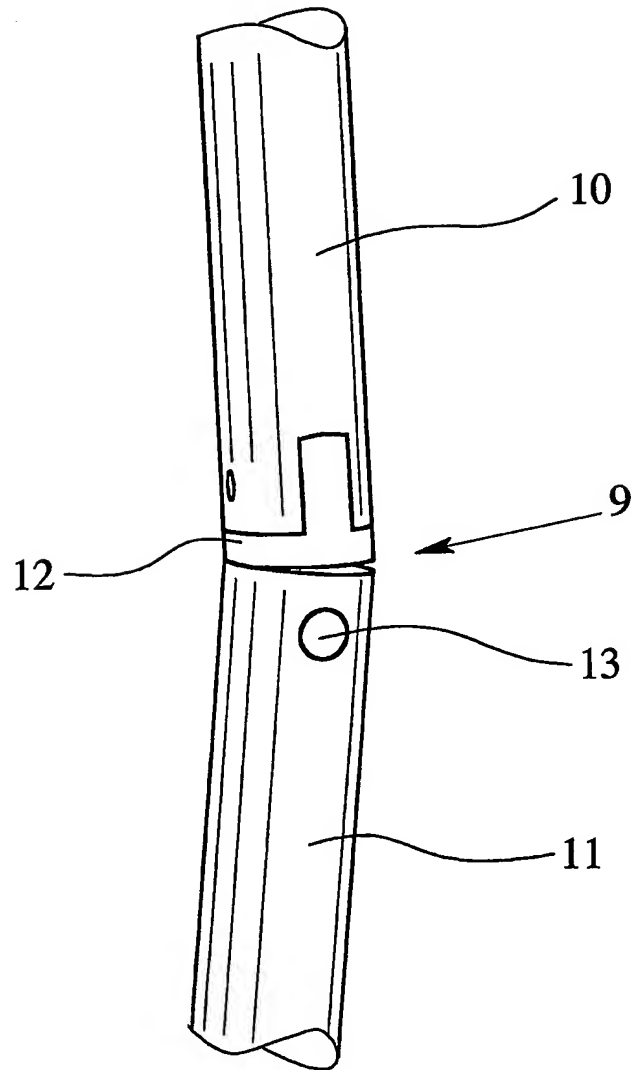


Fig. 3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/007012

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A47L13/20 B25G1/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A47L B25G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/200631 A1 (CLARKE GEORGE G) 30 October 2003 (2003-10-30) paragraph '0025! - paragraph '0026!; figure 1	1-9
A	US 5 920 944 A (BIGGS BLYTH S ET AL) 13 July 1999 (1999-07-13) cited in the application column 3, line 9 - column 3, line 67; figures 1,2	1-9
A	US 5 864 914 A (SALMON DIRK) 2 February 1999 (1999-02-02) cited in the application the whole document	1-9



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

14 January 2005

Date of mailing of the international search report

26/01/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Clarke, A

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2004/007012

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 200320063I	A1	30-10-2003	WO	03092965 A2	13-11-2003
US 5920944	A	13-07-1999	US	6203626 B1	20-03-2001
US 5864914	A	02-02-1999	DE	29512724 U1	19-10-1995
			AT	185260 T	15-10-1999
			DE	19631617 A1	13-02-1997
			DE	59603271 D1	11-11-1999
			DK	757903 T3	03-04-2000
			EP	0757903 A2	12-02-1997
			ES	2137597 T3	16-12-1999
			GR	3031944 T3	31-03-2000